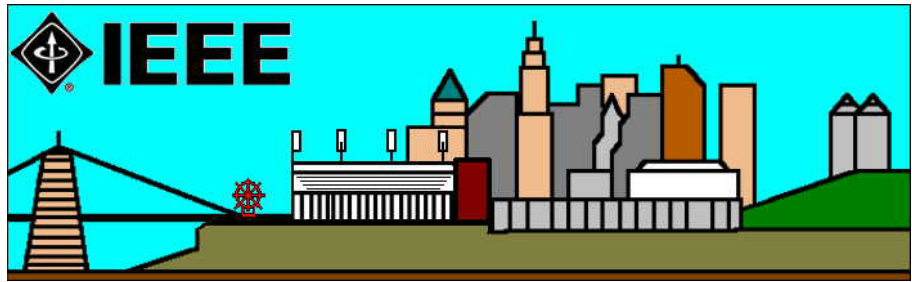


**IEEE CINCINNATI
SECTION
NEWSLETTER
JANUARY 2004**



JANUARY MEETING
Tour of DHL's Hub Facility at the Cincinnati Airport

DATE: Thursday, January 22, 2004

PLACE : DHL - Wendell H. Ford Blvd. at the Greater Cincinnati/Northern Kentucky International Airport (see below for directions).

TIME : 7:00 p.m. to approximately 9:00 p.m.

DHL has recently completed a new \$250 million, state of the art Airport Hub automated distribution center near the Cincinnati Northern Kentucky International Airport and has offered the IEEE Cincinnati Section a tour of that new facility. The CVG Hub is the heart of their network, supporting operations for their global express network. The DHL CVG Hub tour displays that operation and much more.

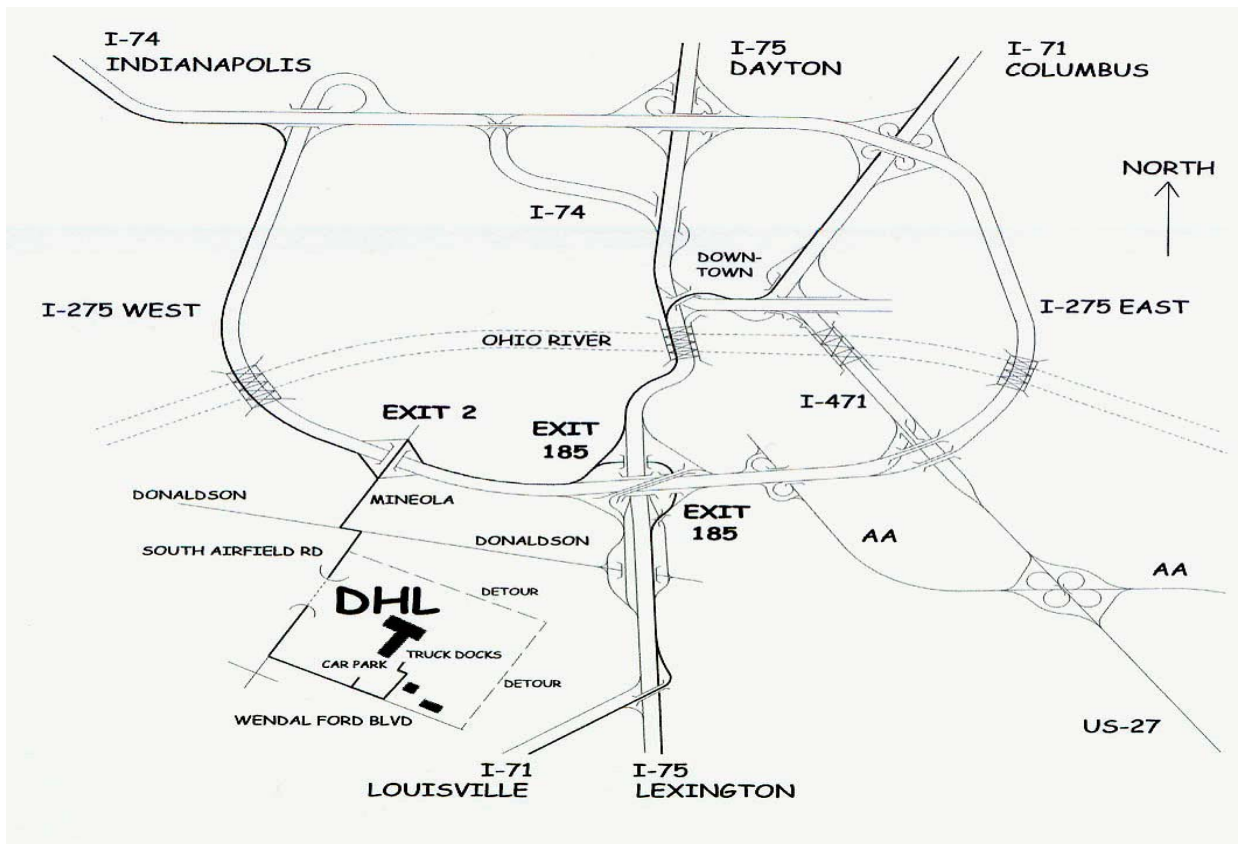
NOTE: THIS IS NOT A DINNER MEETING!!!!!!
ATTENDANCE IS LIMITED ON THIS TOUR TO 20 PEOPLE!!
RESERVE YOUR SPACE EARLY!!

Please call the Cincinnati Section Voice Mailbox at 513-629-9380, by **Noon, Tuesday, January 20, 2004** if you plan to attend. Please leave your **Name, IEEE Member Number,** and **a daytime telephone number.** You may also make a reservation by e-mailing our Arrangements Chair, **Charlie Nash**, at cnash@ieee.org.

DRIVING DIRECTIONS TO THE NEW CVG HUB FACILITY:

DHL'S CVG hub is located at Cincinnati International Airport, which is situated in Northern Kentucky, just off I-275 West.

1. Exit I-275 West at Exit 2, Mineola Pike, and proceed south on Mineola Pike.
2. Mineola Pike will "T" at Donaldson Road. Turn left.
3. Proceed to the next light. Turn right onto South Tower Drive.
4. Turn left at the orange "DHL Detour" sign. Do not go through the tunnel.
5. The detour will take you around a runway. It is ok to go through the open gates as you proceed around the loop. The DHL complex is across the runway on your right.
6. Visitors in autos, turn right into Employee Car Park (Gate #1). Check in with guard at front of lobby. If you get lost or delayed, you can call the S. O. C. at 1-800-826-4903. See map on next page.



CHAIR'S MESSAGE

by Fred Nadeau, Section Chair

On December 4, 2003 the Section visited the American Watchmakers-Clockmakers Institute in Harrison, Ohio and were given a splendid tour of the facility and museum. Due to the Institute's restriction, we were limited to 20-25 people but the people who did sign up early and went through the tour had an enlightening experience. I wish to thank Mr. Gary Richards for his hospitality and for an enjoyable evening. We did have a problem with our dinner reservations at the Caberet and I sincerely apologize to all who came.

We recently added 5 new senior members to our Section thanks to the efforts of Dr. Jim Everly and Dr. Max Rabiee, who hosted the Senior Member Workshop at the University of Cincinnati. Special thanks also go to all the senior members who participated in the workshop, conducting interview of the candidates and preparing the recommendations for induction.

Fred Nadeau, Section Chair

E-mail: f.nadeau@ieee.org

Phone No. 937-289-2800

Results of Section Election of New Member-At-Large

Congratulations to Marie Nemier, who was elected as the Section's new Member-At-Large, replacing Mark Strong. Marie's term of office will be 1/1/2004 to 12/31/2005.

IES

GREEN FAIR – A LIGHTING PRODUCT EXPO HOSTED BY IESNA THE OHIO VALLEY SECTION

PRESS RELEASE

The Illuminating Engineering Society of North America, The Ohio Valley Section, hosts an energy efficient lighting product expo, January 21st, 2004. The exhibits will be open from 3pm to 7pm at the Montgomery Inn Banquet Center, 601 East Pete Rose Way, Cincinnati, OH

Local and national lighting fixture, lamp and lighting control manufacturers will display products of particular interest to architects, interior designers, lighting professionals, engineers and facility management professionals. Manufacturer representatives will be available to answer questions and demonstrate the newest technologies.

There is no admission fee for Green Fair.

IESNA, The Illuminating Engineering Society of North America is a professional organization nearly 100 years old. The Mission of the IESNA is to advance knowledge and to disseminate information for the improvement of the lighted environments to the benefit of society.

For more information on Green Fair or IESNA please contact Amanda Bennett at 513-290-9451 or amanda@ambialightingdesign.com

NEW MEMBERS

The following individuals are IEEE members who are new to our Section:

Eric R. Bachmann	Scott A. Macejak
Ryan Cunningham	Vinay R. Majjigi
Tom Dommershausen	Olivia S. Schaefer
Ron Ernst	Mary Schafrik
Adam S. Gotch	Levan Skervin
Thomas A. Hoffmann	David R. Thomas
James W. Kelso	Travis C. Wake
Han K. Kim	Li Wen
Harikrishnan N.	
Krishnamurthy	John D. Whincup
R. Lakshminarayanan	Cherie L. Zieleniewski

We wish to welcome these new members to our Section!!!

Search on Section's Web Page

You can now search the Cincinnati Section's Web Page (<http://ieee.cincinnati.fuse.net>) . When you log onto the page, click on "Search" and enter the text you are looking for. Give it a try.

Scanning the Past: A History of Electrical Engineering from the Past

Submitted by Dick Reiman, Historian

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Albert W. Hull

Seventy-five years ago this month, the PROCEEDINGS OF THE INSTITUTE OF RADIO ENGINEERS (IRE) included a paper by Albert Hull on a vacuum tube which he had invented called the dynatron. This was only one of Hull's many contributions to the vacuum-tube art during a long career at the General Electric Research Laboratory (GERL) in Schenectady, New York. He authored 74 technical papers, received 94 patents, and also served as a research manager for many years.

The dynatron described by Hull in his 1918 paper had three electrodes: a thermionic cathode, a perforated anode, and a supplementary anode or plate. In normal operation the plate was maintained at a lower positive potential than the perforated anode. Hull explained that secondary emission of electrons from the plate caused the dynatron to behave as a "true negative resistance." Thus the tube could be used as an amplifier or could generate oscillations over a wide range of frequencies. If a control grid were added between the cathode and the perforated anode, the device became what Hull called a "pliodynatron." In addition to grid control, he had tested successfully magnetic control by applying a magnetic field parallel to the axis of the tube. Initially, Hull's work on these novel electron tubes was part of an effort at General Electric to develop amplifiers and oscillators that might be used to circumvent the vacuum-tube triode patents of Lee de Forest and Edwin Armstrong.

Hull was born on a Connecticut farm in 1880 and graduated from Yale University, where he majored in Greek and took one undergraduate course in physics. He taught languages at Albany Academy for a time before deciding to return to Yale, where he earned a PhD in physics. He then taught physics for five years at the Worcester Polytechnic Institute while doing research on photoelectricity. He joined the staff of the GERL in 1914, remaining there until his retirement in 1949.

During 1916, he began experiments on the use of magnetic control of vacuum tubes as an alternative to grid or electrostatic control. By 1920 this research led to his invention of the magnetron, which took the form of a coaxial cylindrical anode and cathode with an axial magnetic field produced by an external coil. The Hull magnetron was tested as an amplifier in radio receivers and also as a low-frequency oscillator. It was reported in 1925 that a magnetron made at GERL could generate a power of 15 kW at a frequency of 20 kHz. At the time Hull anticipated that the magnetron would find greater use as a power converter than in communication applications.

Hull also was a key participant in the development of gas-filled electron tubes at the GERL during the 1920s. In 1927 he discovered how to protect thermionic cathodes from rapid disintegration under ion bombardment. This enabled the successful development of a variety of hot-cathode thyatron (gaseous triodes) and phanotrons (gaseous diodes). These devices were employed in such applications as synchronous torque amplifiers, thyatron motors, control of guns and machine tools, and direct-current power transmission.

Hull became assistant director of the GERL in 1928 and was known for his collegial management style with minimal interference with the research agenda of his staff members. The IRE awarded him the Morris N. Liebmann Prize in 1930 and the Medal of Honor in 1958. He was elected a member of the National Academy of Sciences and served as president of the American Physical Society in 1942. He did consulting work and served on an advisory committee of the Army Ballistics Research Laboratories after retirement from General Electric. He died in January 1966 at the age of 85.

IEEE NEWS

IEEE-USA Hails Congressional Passage of "Nanotechnology Research & Development Act"

WASHINGTON (November 20, 2003): Passage today by the U.S. Congress of "The Nanotechnology Research and Development Act" will "help fuel future economic growth, enhance public health and the quality of life, as well as sustain U.S. leadership in science, engineering and technology" said Jim V. Leonard, president of IEEE-USA. "Nanotechnology research and development is in its infancy, but the promise of nanotechnology to usher in a new industrial age is unquestionable," Leonard added. Nanotechnology can be described as the observation and manipulation of materials at the molecular and atomic levels.

The U.S. Senate approved the nanotechnology bill on November 18, followed by the U.S. House of Representatives today, on November 20. The legislation is expected to be signed into law by President Bush. The Act creates a National Nanotechnology Research Program to support long-term nanoscale R&D, increase America's competitiveness in nanoscale technology, and promote effective education for the next generation of nanotechnology professionals.

The legislation authorizes \$3.7 billion to be spent over the next four year for such agencies as the National Science Foundation, Energy Department and NASA. It also requires a panel of experts to advise the President on nanotechnology issues. In addition, a new American Nanotechnology Preparedness Center will be established to study the potential effects of nanotechnology.

According to IEEE-USA President Leonard, "Over the next decade, nanotechnology will lead to significant advances in electronics, defense and homeland security, agriculture, communication, biology, diagnostic medicine and structural." He noted that innovation stemming from advancements in nanotechnology could lead to new generations of microelectronics that have the capacity to store information equal to the Library of Congress, as well as point to prosthetic and medical implants that are molecularly designed to interact with cells of the human body.

Both IEEE-USA's R&D Policy Committee and the IEEE Nanotechnology Council previously endorsed the legislation. IEEE-USA's position on nanotechnology is available at <http://www.ieeeusa.org/forum/positions/nanotechnology.html>. Earlier this year, the IEEE cosponsored a congressional luncheon briefing on understanding nanotechnology, highlighted at <http://www.ieeeusa.org/forum/Events/Nanobriefing03/index.html>.

U.S. IEEE Members' Median Income Tops \$100,000, IEEE-USA Salary Survey Reveals

WASHINGTON (December 5, 2003) - The median salary for U.S. IEEE members topped \$100,000, according to the latest IEEE-USA Salary & Fringe Benefit Survey.

Median incomes from primary sources - base pay plus any self-employment income, commissions, or bonuses - for U.S. members working full time in their area of professional competence increased from \$93,100 in 2000 to \$101,000 in 2002. When accounting for inflation and stated in 2000 dollars, 2002 purchasing power was \$96,677, an increase of 3.8 percent.

"Despite sharp declines in demand for electrical, electronics and computer engineers, the IEEE's U.S. members have held onto the gains in pay they achieved in recent years," IEEE-USA survey analyst Richard Ellis said. "Members were able to stay ahead of rises in the cost of living and achieve further gains in their real incomes."

The survey also mirrors recent unemployment trends. The number of members reporting involuntary unemployment jumped from less than one percent in 2001 to four percent in 2003. This is the highest level of member unemployment ever recorded, more than double the levels reached in the recession periods of the mid-1970s and early 1990s. Nevertheless, U.S. IEEE members were out of work at a much-lower rate than their non-IEEE counterparts.

The U.S. Department of Labor reported that the unemployment rates for all electrical and electronics engineers reached an all-time high of 7.0 percent in the first quarter of 2003, and stood at 6.7 percent in the third

quarter. The third-quarter jobless rate for computer hardware engineers increased to 6.9 percent, while the rate for network and computer systems administrators reached 7.6 percent.

The survey results reflect typical levels of compensation for the membership as a whole. Most individuals have done better because, in addition to improvements in the general pay scale, they have also obtained raises that reflect increases in their skills and levels of experience. Further, the survey shows wide variations in the compensation of otherwise similar people. Pay for members with similar specialties and job functions, types of employers, geographic locations, education and amount of experience varies by more than \$50,000 between those at the lowest and highest ends.

"This is clear evidence," said IEEE-USA's Ellis, "that sheer skill and general mastery of the work is still the key to top pay, and is much more important than choices of specialization or other variations in career paths."

The Web-based survey is based on 2002 data from the largest number of complete responses (11,137) since the survey was first administered in 1973, and is the IEEE's most accurate portrait of U.S. member compensation. The survey can be taken any time, and members who do so receive free one-year access to the IEEE-USA Salary Service. This career-management tool, along with the survey, is available at <http://www.ieeeusa.org/careers/salary/>. It provides U.S. IEEE members with an individual salary calculator for each year they take the survey, and additional features - such as a personal salary history - are scheduled for introduction in 2004.

A sophisticated compensation product for employers, the IEEE-USA Salary Database, is currently under development. Further information will be available at <http://www.ieeeusa.org/careers/salarydatabase/>.

NEW EXHIBIT AT IEEE VIRTUAL MUSEUM - WORLD WAR II: HOW WAR IMPACTED TECHNOLOGY; HOW TECHNOLOGY IMPACTED WAR

The IEEE Virtual Museum (www.ieee.org/museum) takes a look back at a tumultuous time in history with its latest exhibit, World War II: How War Impacted Technology; How Technology Impacted War. Visitors to the site can read a primer on the causes of the war and explore some of the technologies that transformed the way war was fought, such as the airplane, aircraft carriers, and the submarine. Also, they'll learn about the technologies that grew out of wartime urgency--radar, the jet engine, nuclear weapons, and rocket technology. In addition, they'll find out about the people serving on the battlefields and on the home fronts who created and used technology in new and innovative ways, setting the stage for the technology boom in the latter half of the 20th century.

IEEE-USA's "Today's Engineer" Update

IEEE-USA "Today's Engineer" has been updated with new content. To read the latest "Today's Engineer", go to: <http://www.todaysengineer.org>. Articles included are the following:

- Backscatter: Designing Junk?

Most of us probably have our own personal collections of e-waste: "dated" computers, thermal fax machines, older-model CD players and cell phones, VCRs. We can credit "planned obsolescence" at least partially for these collections. And now that we have the newest, the fastest, the latest bells and whistles, what do we do with the growing pile of yesterday's latest and greatest? Go to: <http://www.todaysengineer.org/Dec03/backscatter.asp>

- Preparing Effective Visuals

You're scheduled to give a presentation and want to get and keep your audience's attention. You know creative visuals would help support your talk. After all, a presentation without visuals is, well, just a presentation, right? Not exactly. In fact, unless they're good -- which is rare -- visuals can actually kill an otherwise solid presentation. What do you need to know to produce all-around, effective visuals that will stay with your audience long after your talk? Go to: <http://www.todaysengineer.org/Dec03/preparing.asp>

- What Policies Does IEEE-USA Advocate?

Position statements serve as the basis for IEEE-USA's legislative agenda and represent the authority for the policies advocated on behalf of IEEE's U.S. members. How does a position become one? And should we limit policy advocacy to technology issues only or do career policy issues still deserve our voice? Go to: <http://www.todaysengineer.org/Dec03/policies.asp>

- Government Hops on the Smart Card Bandwagon

The ramp up of smart card technology in this country has been slow. Lately, however, government agencies and other organizations have picked up the pace, using smart cards for employee identification, payment options and fraud protection. What's more, groups are forming partnerships that allow users to use the same cards for very different purposes. Find out what and who has been behind the step up in smart card use. Go to: <http://www.todaysengineer.org/Dec03/smartcards.asp>

Also in this issue:

- Engineering Hall of Fame: The "Forgotten Father of the Computer"
- Capitol Shavings: Pension Tension on the Hill
- World Bytes: Festivals and the Global Community of Values
- IEEE-USA President's Column

"IEEE-USA TODAY" Update

"IEEE-USA TODAY" has been updated with new content. To read the latest version, go to: <http://www.ieeeusa.org>. Articles included are the following:

- IEEE-USA CALLS ON CONGRESS TO CLOSE L-1 VISA LOOPHOLES

Congress should enact legislation requiring that the use of L-1 visas not displace U.S. workers, according to a recently adopted IEEE-USA position.

Read IEEE-USA's news release at: <http://www.ieeeusa.org/releases/2003/121003pr.html>

- "STOLEN JOB" REPORTS NOMINATED FOR REGIONAL EMMY

Steven Cooper and Terri Spitz, of WKMG-TV in Orlando, Fla., have been nominated for a 2003 Suncoast Regional Emmy for their series of investigative reports on how employers are taking advantage of loopholes in the nation's immigration laws to replace U.S. engineers and computer scientists with cheaper foreign workers on H-1B and L-1 visas.

For more details, go to: <http://www.ieeeusa.org/releases/2003/052703pr.html>

- CELEBRATING 100 YEARS OF POWERED FLIGHT

December 17 was the 100th Anniversary of Wilbur and Orville Wright's historic first flight. IEEE-USA joined the IEEE Aerospace & Electronics Systems Society (AESS) at "Inventing Flight: Dayton 2003" to celebrate the first 100 years of powered flight.

For more, visit <http://www.ieeeusa.org/newspubs/features/100yrs.htm>

President's Column, December 2003

Jim V. Leonard

2003 IEEE-USA President

My dear U.S. IEEE members, I wish to thank you for giving me the opportunity to serve as your 2003 president. As the year closes, I'd like to look back at some of IEEE-USA's major 2003 achievements. These could only be accomplished with the help of our many volunteers and dedicated staff.

On Capitol Hill, we held two Congressional Visit Days, including one on engineers' careers, and a nanotechnology briefing for Senate staffers. We've started a grassroots movement that provides an opportunity for our members to participate in shaping government policies.

Ron Hira, chair of the IEEE-USA Research and Development Policy Committee, delivered testimony on offshoring before the House Committee on Small Business. As president, I have communicated with every member of Congress and the President that we want American engineering jobs to remain in America for Americans.

Our Board of Directors passed many new policy position statements, including one on reverse engineering that served as a basis for an amicus curiae brief that we filed with the U.S Supreme Court in June.

After WKMG-TV in Orlando, Fla., did such a wonderful job on their "Stolen Jobs" series, which showed how offshoring and temporary workers were hurting employment opportunities for U.S. high-tech professionals, we reproduced the series onto CD and distributed it to the media, other societies and members of Congress.

In March of 2003, we held another successful IEEE-USA Leadership Workshop and Professional Development Conference in Seattle. Next year's workshop is slated for Atlanta.

When the blackout of 2003 struck in mid-August, IEEE-USA spokespeople drew national coverage. We were quoted in the Wall Street Journal and the Washington Times, heard on CBS and BBC radio and seen on CNBC and MSNBC, to name a few. IEEE-USA continues to look into the cause and provide policy recommendations for preventing future problems.

Throughout the year we have been preparing for the IEEE's role as lead society of National Engineers Week in 2004. We have a number of fun and educational activities planned to promote engineering awareness and public understanding of the profession. I urge your participation in EWeek '04.

In July, I was particularly pleased to represent IEEE-USA at the centennial of powered flight celebration in Dayton, Ohio. Working with the IEEE Aerospace & Electronics Systems Society, we sponsored a display that featured a 100-year timeline on avionics. I was so impressed with the display that I arranged for it to appear at the Digital Avionics Systems Conference in Indianapolis in October. Successful engagement between IEEE-USA and other IEEE organizational units (RAB, TAB, EAD, PUBS, Standards) is ongoing.

I am involved with an IEEE Board-level committee that is striving to improve our industry relations by defining what the IEEE can do to help industry. And we will ask its leaders to continue to support our IEEE volunteers.

I'd like to thank past president LeEarl Bryant and the IEEE-USA Board of Directors for their help and support this year. I know that the presidency of IEEE-USA is in good hands with John Steadman, who will succeed me on January 1. And again thanks to each of you, the 235,000 U.S. members of the IEEE, for allowing me to serve you as your top IEEE-USA volunteer leader in 2003.

"IEEE-USA TODAY" Update

IEEE's "The Institute" has been updated with new content. To read the latest version, go to: <http://www.ieee.org/theinstitute>. Articles included are the following:

- **Seeing the Invisible: IEEE Leads the Way in Medical Imaging**

Through its technical societies, special issues of publications, and conferences and symposia, the IEEE has helped to bring forward technological advances in medical imaging. Find out more at <http://www.theinstitute.ieee.org/portal/pages/tionline/legacy/inst2003/dec03/12w.fimaging.xml>

- **IEEE Spectrum Editors Moderate Panels on Consumer Electronics**

IEEE Spectrum and the Consumer Electronics Association will present three educational panels at the 2004 Consumer Electronics Show to be held January 8-11 in Las Vegas, Nev., USA. Moderated by IEEE Spectrum editors Harry Goldstein, Glenn Zorpette, and Tekla Perry, the panels will present the latest information on 3D displays, portable music and video systems, and new applications for gallium nitride chips. Find the schedule at http://www.cesweb.org/attendees/conferences/search/session_by_track_list.asp?ID_track=ET04&ref=ET04

- **An Engineer's Life in Nigeria**

Muyiwa Taiwo helped found the IEEE Nigeria Section, but he had to leave his homeland. Find out the ups and downs of this member's career at <http://www.theinstitute.ieee.org/portal/pages/tionline/legacy/inst2003/dec03/12w.memprof.xml>

- **Marketplace: When the Power Fails**

Since last August, more than 100 million people in North America and Europe have lost electricity. What can engineers do to prevent large-scale blackouts from happening again? Weigh in at <http://www.theinstitute.ieee.org/portal/pages/tionline/legacy/inst2003/dec03/12w.marketplace.xml>

- **Circuits Take Center Stage at Conference**

A retinal prosthesis, faster Internet connections, and the largest on-chip cache ever built are just three of the new applications for integrated circuits to be described at the 2004 International Solid-State Circuits conference being held from 14 to 19 February in San Francisco, USA. Find out more about this conference at <http://www.theinstitute.ieee.org/portal/pages/tionline/legacy/inst2003/dec03/12w.conference.xml>

- **2002 Solid-State Circuit Conference Proceedings Now Available**

Groundbreaking research in microchips was also showcased at the 2002 International Solid-State Circuits Conference. Read about the first disposable chip for hearing aids and other technologies in the conference proceedings available through the IEEE Online Catalog & Store <http://shop.ieee.org>

- Nominations Sought for IEEE Awards

The IEEE Awards Board is seeking nominations for medals, recognitions, and prize papers for 2005. The deadline is July 1, 2004. Find out which awards are being presented and how to submit nominations at <http://www.theinstitute.ieee.org/portal/pages/tionline/legacy/inst2003/dec03/12w.awards.xml>

The IEEE Cincinnati Section Executive Committee
Member Names and Phone Numbers

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